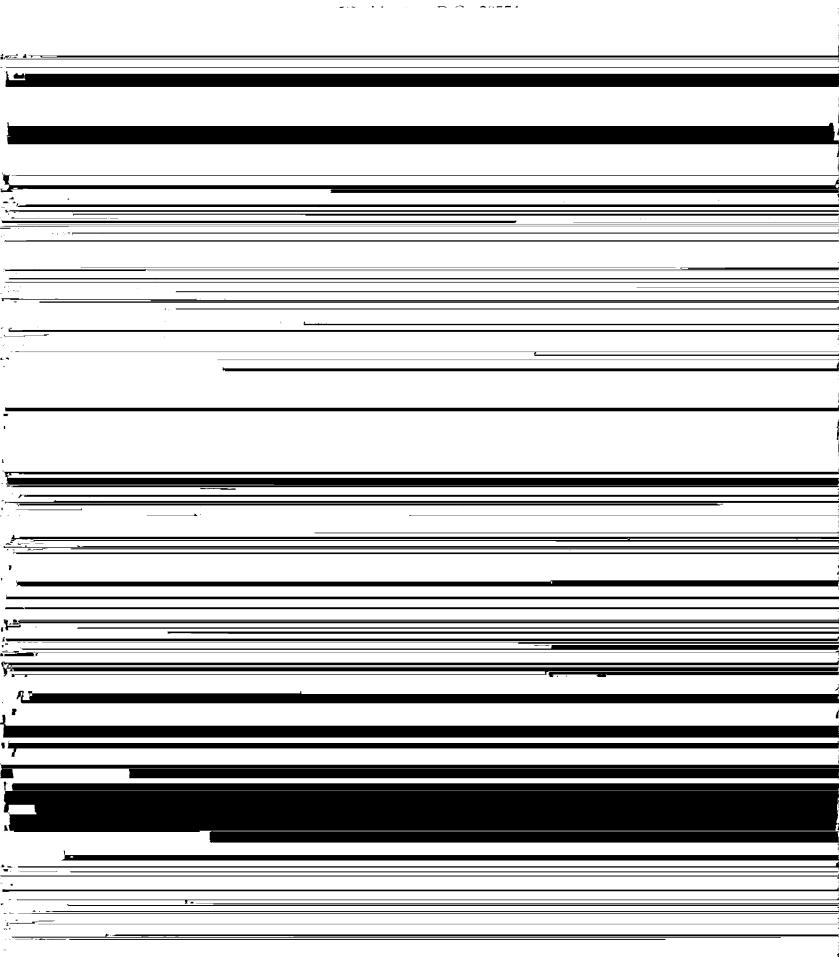
Before the FEDERAL COMMUNICATIONS COMMISSION



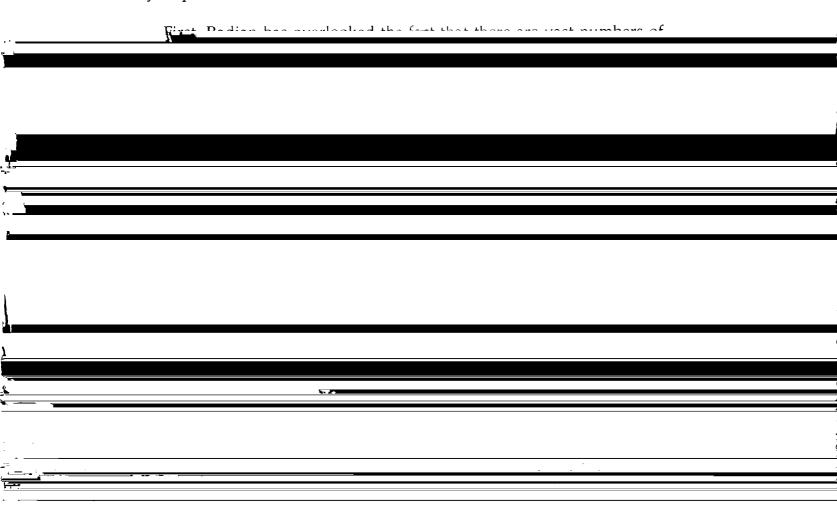
and have been marketed by EnScan, since the mid-1980s. These devices represent a low cost alternative to manual methods of collecting gas meter data. EnScan's newer demand-side management features, by reducing peak demand for utility service, enable utilities to provide service at lower cost and to minimize the need for constructing additional, pollution-generating facilities.

The three components of the EnScan's AMR system are: (1) the encoder receiver transmitter ("ERT®") unit, which responds to a "wake-up" signal by transmitting information from a utility meter to a receiver; (2) the DataCommand® Unit ("DCU"), which transmits the wake-up signal and receives the information that is transmitted by the ERT units: and (3) the ReadOne® Pro Unit, which is used

Utilities demand high standards of reliability, accessibility and accuracy for AMR systems. Utilities expect, and EnScan's system is designed to provide, reliability on the order of 99.3-99.6%. Signal strength and data integrity are therefore critical.

III. WIND PROFILERS OPERATING ON 914-916 MHz WILL CAUSE INTERFERENCE.

Radian stated in its Petition that it is "unlikely" that wind profiler radar systems operating on 914-916 MHz will cause interference to other communications devices. Petition at 8. According to Radian, the only users sharing these frequencies are licensees in the Industrial, Scientific and Medical ("ISM") and Amateur Radio Services, and Radian argues that the users in these services will not receive interference because: (1) wind profiler radar systems will be "located in isolated, unpopulated areas," and (2) "wind profilers are designed to radiate . . . with low level side lobe emissions." <u>Id</u>. Radian's interference analysis is flawed in virtually every respect.



Third, Radian's statement that wind profilers have low side lobe emissions is erroneous. The side lobes have an EIRP of 36 dBm, which is 5,000 times the signal strength of the fundamental emissions for EnScan's Part 15 devices. See attached Engineering Statement. Given this disparity, wind profiler devices operating at 914-916 MHz would cause devastating interference to EnScan and other Part 15 users in the 902-928 MHz band. Id.

In sum, the likelihood that wind profiler radar systems will interfere with cochannel users is substantial, and there is a large universe of users on whom such interference would wreak havoc. Indeed, according to the materials that are appended to Radian's Petition, when wind profilers were operated in the 400 MHz band, their side lobe emissions interfered to a substantial degree with NOAA's Search and Rescue Satellite Aided Tracking network. Petition, Appendix C, p. 3.1

CONCLUSION

ENSCAN, INC.

For the foregoing reasons, Radian's proposal should be rejected.

Respectfully submitted,

By: /s/ Joseph A. Godles

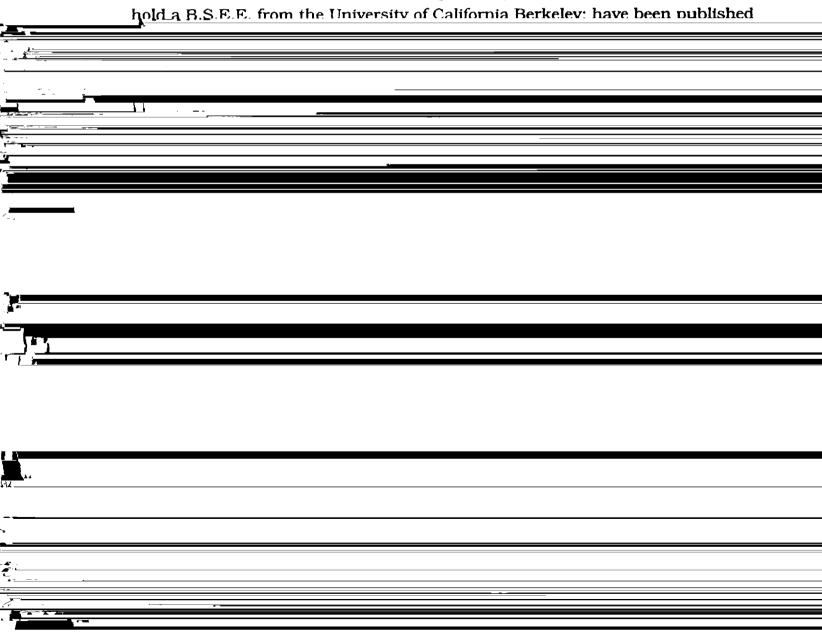
Itron/EnScan

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Engineering Statement of John W. MacConnell

I am a senior principal engineer at Itron, Inc. ("Itron"), which is the parent company of EnScan, Inc. ("EnScan"). I have extensive experience in the design and operation of radio systems. Prior to joining Itron, I was a co-founder of Pacific R & D, Inc., a company that specialized in the design of complete communications systems, radar systems, RF simulators, transmitters, receivers, and frequency synthesizers. Before co-founding Pacific R & D, I was a member of the technical staff at the Jet Propulsion Laboratory, and was extensively involved with the analysis, design, and fabrication of RF communications and planetary radar tracking systems. I hold a B.S.E.E. from the University of California Berkeley: have been published



As will be shown below, the sidelobes from the Radian system are nearly 5,000 times stronger than EnScan's transmitter when both are in free space. Since many of EnScan's transmitters must be located in areas resulting in high path losses, such as basements and underground parking structures, the effective power ratio is much larger than 5,000. It is likely that the sidelobes from one of Radian's radars will cause unacceptable levels of interference to EnScan's system when their radar is within about 5 miles of an EnScan installation. The effect of this interference is further exacerbated by Radian's increasing their requested system bandwidth to 12.5 MHz from 2 MHz.

EnScan's systems tend to be installed in populated areas. including airports. Although Radian claims that its systems will not be located in populated areas¹, and implies that there is no need to place them at airports because they will not be used for wind shear measurements², the evidence is to the contrary. Radian's Petition refers to tests that have been conducted at Los Angeles International Airport (LAX), and Denver's Stapleton Airport², both of which are airports in major metropolitan areas. Further, in Radian's Petition, on page 4 it states "Wind Profilers located in the vicinity of airports can serve an important safety function by detecting wind shear conditions, a serious air hazard. Helicopters, aircraft carriers, missile and satellite launches and the Space Shuttle program similarly stand to reap safety benefits from the continuous, high-resolution wind data that a state of the art 915 MHz Wind Profiler can provide." (Emphasis added). Additionally, in Appendix B.2.2 of Radian's Petition it stated "Although the wind profiler is not well suited for detecting microbursts (the microburst would have to be very near the site), it has the potential of detecting the conditions that occur before the onset of microbursts. Locating wind profilers at or near airports will facilitate this application." (Emphasis added). This also seems to indicate the likelihood that wind profiler systems will ultimately end up near airports, which are typically near populated areas. Still another example is in the Houston area, where there are at

¹ From page 8 of Radian's original filing, dated Aug 13, 1992. RM 3092 2 From Radian Engineering statement by John Neuschaefer, December 16, 1992.

least three experimentally licensed wind profilers, all of which are located in or near metro areas.

Technical Discussion:

Radian has received licenses for Wind Profiler Radar Systems with peak EIRPs of up to 400,000 watts. Their system uses a phased array antenna with a maximum gain of approximately 29 dBi². The data provided for a similar array structure³ shows side lobes of approximately -50 dB from the main lobe at angles nearing the horizontal. Since these are computed values, not measured values, the emissions in practice (considering the fact that these are phased array antennas) are likely to be higher, even taking into account the fences around the antennas. In any event, using the computed values, the EIRP in the horizontal side lobes is:

+86 dBm (transmitter EIRP) - 50 dB (sidelobe attenuation) = +36 dBm This is the peak EIRP. EnScan's system is susceptible to the peak power of the radar because it is an AM system, and also because of its relatively high bit rate, which limits the integration time. The peak transmitter EIRP of EnScan's system is approximately -1.3 dBm. This means that sidelobes from Radian's radar are 37 dB (5,000 times) stronger than EnScan's system in free space.

EnScan's receivers can be deployed three ways: In a hand-held computer, in a vehicle, such as a van; or in fixed locations, such as on power poles or light standards. These receivers are attempting to receive signals that are intrinsically 5,000 or more times weaker than Radian's signal in free space. The potential for interference here is clear.

In practice, however, Radian's signals will be more than 5,000 times stronger than EnScan's. This is because EnScan's transmitters, have to transmit through a far inferior path, being located in such places as basements, parking structures etc., while the radar path is nearly line of sight to the EnScan receiver.

³ From Appendix A.1.2 of Appendix A of Radian's original filing. RM 3092

Technical Conclusion:

We have shown that the Radian Wind Profiler would cause harmful interference to EnScan's system, which is already deployed in the field providing benefits to the public. The wind profiler will probably cause interference to other users as well if it is placed anywhere near populated areas. Although Radian says that it has no intent of being near metropolitan areas, including airports, it already appears to be well represented in both of those environments.

In sum, the 902 to 928 MHz band is a poor frequency choice for the wind profiler due to the interference that it will cause to the many users and incipient users, including EnScan, of the 902 to 928 MHz frequency band.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge, information and belief.

John W. MacConnell

June 15, 1993